DOCUMENT RESUME

ED 173 177 SE 028 491

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TITLE The Secondary Consumer Mathematics Curriculum in B.C.--Present and Proposed.
SPONS AGENCY Educational Research Inst. of British Columbia, Vancouver.
PUB DATE 30 Jun 79
NOTE 58p.
AVAILABLE FROM Educational Research Inst. of British Columbia, Ste. 400, 515 West 10th Avenue, Vancouver, British Columbia, Canada V5Z 4A8 (no price quoted)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS *Business Education; *Consumer Education; *Home Economics; Mathematical Applications; *Mathematics Curriculum; *Mathematics Education; Mathematics Instruction; *Research; Secondary Education
IDENTIFIERS *British Columbia

ABSTRACT

Consumer mathematics topics taught in the subject areas of mathematics, business education, and home economics were compiled. The compilation was analyzed and revised by a panel of secondary teachers and university professors from the three subject areas. The proposed curriculum contains 32 topics arranged in rank order of importance by the panel. The prescribed texts used in two consumer courses covered 44% of the topics in the proposed curriculum. The author and panel concluded that secondary students are not acquiring basic skills and knowledge in consumer mathematics in spite of the fact that three subject areas are teaching consumer topics. (MP)

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THE SECONDARY CONSUMER MATHEMATICS CURRICULUM IN B.C.--

PRESENT AND PROPOSED

by

Dr. Shirley Mabel Wong

A Research Report

submitted to

Educational Research Institute of British Columbia

June 30, 1979

SE 028 491

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PROBLEM

Because basic skills and knowledge of consumer mathematics meet both present and future needs of students there is widespread support that it is a part of core, basic, or general education. It is a survival skill in the sense that everyone must grapple with the problems of personal finance and is deemed one of the key exit competencies that should be required before the end of secondary education. Graduates eventually forget the details about sets and base value without personal damage, but they pay through dearly gained experience for their ignorance about personal finance.

Although consumer topics are presently covered in separate courses in Mathematics and Business Education, and integrated into four Home Economics courses, it is not known whether all students have access to this subject matter.

The B. C. Mathematics Assessment (8) expressed concern about this curriculum area and recommended that coverage be expanded. An earlier (11) study that assessed the ability of secondary students, immediately prior to graduation, to handle selected basic consumer topics found that competency was weak or very weak in three out of four topics. The data available from both reports indicate that competency in this vital area is not being developed in B. C.

PURPOSE OF THE STUDY

The primary purpose of the study was to develop a curriculum guide in consumer mathematics for secondary schools in B. C. based on the recommendations of a panel of experts from the subject areas of Mathematics, Business Education and Home Economics.

In addition, the panel would be asked to discuss related factors associated with consumer mathematics:

a) pupil access to instruction,

b) the relationship of social, economic and values factors to computational factors,

c) instruction, the pre-service and in-service preparation of teachers of consumer mathematics,

d) effect of pupil use of hand held calculators.

DESIGN

The new curriculum was constructed by identifying the present curriculum by integrating all consumer topics taught at the secondary level and then revising it on the basis of expert opinion.

A four-step procedure was used:

1. Preparing three reports on current curriculum of consumer topics in Mathematics, Business Education, and Home Economics for study by committee.

2. Organizing a panel of instructors knowledgeable about consumer mathematics from the three subject areas with representation from secondary and university levels.

3. Convening committee to discuss reports, related factors, and to make recommendations about curriculum topics and instruction.

4. Preparing the curriculum and final report.

1. Preparation of First Report

The first report was prepared to establish the what, where, and by whom about consumer mathematics topics for the province. To this was added available data about student performance and recommendations regarding instruction.

Identification of Topics

To identify the existing curriculum, consumer items were identified from the Mathematics, Business Education, and Home Economics curriculum guides. All three have 1978 publication dates and the last two are preliminary editions, and therefore, represent what will be taught for the coming five to six years after the final revisions are finished.

Topic Labels

The topics were first listed using the labels from each guide and 50 different terms were found. Some topics were synonyms or sub-topics of more encompassing labels--eg. mortgages could be considered under credit or savings and investments rather than treated separately.

The 50 topics were condensed into 30 categories with the computation of fractions, percents, and decimals treated as a single listing.

Duplicated Topics

The topics were arranged into alphabetical order and the courses where it was taught were added. The degree of duplication of coverage within and between subject areas was apparent after this process was completed.

In the Home Economics curriculum guide, Management and Consumerism appeared to be a separate course while in fact these topics are integrated into four other Home Economics courses. This situation was clarified during the committee meeting and the first report was revised to reflect this change.

Student Proficiency Data

Findings about student proficiency reported by the B. C. Mathematics Assessment, American data--National Assessment Educational Progress, and the Wong study were added to each topic.

Core Curriculum Recommendations

Recommendations about consumer topics from the Ministry's proposal for a core curriculum--"What Should Our Children Be Learning?" were shown for the topics where applicable.

Summary Grid

To assist a reader in obtaining the overall picture, a grid cross-referencing courses and topics was prepared.

Ranking Sheet

A questionnaire was prepared for each committee member to rank the importance of a topic using a four point scale: 1. Essential, 2. Desirable, 3. Include if time permits, 4. Delete. Each respondent was asked to suggest courses where each topic should be taught without indicating any rank. The ranking sheets were to be returned within three weeks of mailing for compilation. The first report and ranking sheet are shown in the Appendix.

Committee Formation

Since consumer mathematics is taught in three subject areas, it was deemed essential that any curriculum proposal involve professional input from the three areas. Curriculum and instruction is affected not only by the teachers, but also by those who work in their pre-service and in-service training; hence, representation from the university level is also essential. A committee representing these interests was organized first by contacting professors in Mathematics and Home Economics in the Faculty of Education at UBC who had worked with Consumer Mathematics. The professors then provided names of secondary teachers. The composition of the committee is shown in the Appendix.

2. Second Report

Because the first report did not show the context for each topic for each subject area, the courses where each topic was taught was compiled from the curriculum guides and sent to each member (see Appendix).

3. Third Report

The third report consisted of a compilation of the ranking sheets completed by committee members. It provided information about the initial response of members as to the rank order of importance of topics and suggested courses where topics were to be taught. The third report is found in the Appendix.

Committee Meeting

The committee met to discuss the following agenda:

1. Importance of consumer mathematics and student access to courses under the present curriculum structure. The effects of changes in UBC admission requirements.

2. Duplication and overlap between courses and subject areas.

3. The importance of the social and economic factors as compared to computational factors.

4. Instruction and teacher preparation.

5. Effect of pupil use of hand-held calculators.

Importance of Topics

The committee agreed unanimously that consumer mathematics topics form part of the core or basic knowledge that every pupil should acquire before leaving secondary education.

There are two courses devoted to consumer topics--Consumer Mathematics 11 in Mathematics and Consumer Fundamentals 10 in Business Education. In Home Economics no separate course is provided, but the topics are integrated into four other Home Economics courses. The primary problem is finding time and a place in the present curriculum so that all students would have access to this material.

Although consumer topics are designated as core in both Mathematics 9 and 10 courses, these topics are not being taught. A number of reasons account for this:

1. Objectives for consumer topics are not found in the Mathematics curriculum guide and hence teachers may not attach the same degree of importance to consumer topics as to the more fully developed topics. A committee of mathematics teachers from North Vancouver district is presently writing consumer objectives with completion anticipated by fall, 1979. This work will remedy the present deficiency if it can be distributed throughout the field.

2. Mathematics teachers are not prepared in their pre-service training to deal with the social, economic,and values factors for the Consumer Mathematics course. Little is available in in-service education. Hence,there will be a tendency to avoid teaching what is outside of one's background knowledge and to concentrate on what one knows best.

3. A third reason is the change of UBC's admission requirements. The increase in the number of required Arts and Science courses at the secondary level has restricted the student's choice of electives to a greater extent than was anticipated at the time the standards were changed. Not only are students enrolling in the required number of courses, but are electing additional courses that qualify for admission as backup

courses in the event that they do not do well in the prescribed courses. As a result, the likelihood of students learning consumer mathematics in the elective areas of Business Education and Home Economics is diminishing. Under the present structure most students will not be exposed to consumer math topics.

Because Home Economics and Business Education are elective programmes, the committee agreed that a Mathematics course was the prime vehicle for reaching all students. The prospects for adding Consumer Mathematics to the list of required subjects are extremely dim at present. The most practical solution is to ensure that topics will be covered in Mathematics 9 and 10 where they are designated as core, and to encourage students to take courses in Business Education and Home Economics as electives.

Duplication and Overlap

In addition to the number of curriculum topics, the committee discussed duplication and overlap between the three subject areas. It was noted that the Business Education curriculum had the highest frequency of duplication as their students entered their courses at both the junior and senior levels. Although some repetition is needed and desirable, this creates a problem for students who elected and started a comprehensive Business Education programme at the junior level.

Duplication of topics between subject areas was not considered a problem because the present curriculum structure has resulted in more rigid streaming of students. It is unlikely that a student has sufficient space in his timetable to enroll in the courses where subject content overlaps.

Social and Economic Factors

Another problem that differentiates consumer topics from other mathematical topics is the related social, economic, and values factors that accompany the computation factor. Often these require more learning/teaching time than for computation if the context where the need for a mathematical operation arises is to be established. That is, in banking, knowledge about the role of the Bank of Canada, the influence of a multi-branch organization on the national economy would require more teaching time than the arithmetic required to complete the work on banking services. Another example is a comparison between stocks and bonds in considering alternative forms of investment. The teaching becomes not only superficial but also misleading if one only matches the rate of return from the interest against the dividend without covering ownership differences.

In fact, it is impossible to teach consumer mathematics without the background context which makes the problems meaningful. The division of time between the computational, and social and economic factors is a matter every teacher must decide on the basis of personal knowledge and interest, and the grade level of pupils.

Consumer Topics and Values

One committee member pointed out another special characteristic of consumer mathematics topics. This relates to quantification and the influence of value systems for all topics other than basic computation.

When dealing with consumer topics, the learner must recognize whether the variables are quantifiable at all, that is, whether the major variables are quantitative or value-based. For example, in automobile ownership the costs of owning the unit in lowest dollar terms can be identified,

but life-style influences may provide conditions that change the order of importance of applicable variables. An individual who decides to purchase a truck for recreational hunting would not consider a mini Honda if one plans to sleep in the vehicle and deer is the hunting objective. Value system influences are very strong and very often override quantitative factors.

Teaching of Consumer Mathematics

Although the committee agreed that Mathematics courses would provide the best access to students, there was unanimous concensus that the teaching of the courses be approached on an interdisciplinary basis between the three subject areas. In B. C. the historical criteria of teacher certification and staffing patterns mean that a certificated teacher is deemed qualified to teach any course within the grade level where a certificate was granted without any special subject qualification requirement. Many teachers have changed their teaching areas on the basis of meeting timetable needs for the school or on the basis of personal interest. In some provinces certificates must be endorsed by subject before a teacher is permitted to instruct in an area. The B. C. situation allows much greater flexibility for both schools and teachers and has not created problems evident to the public. Hence, it is easy to provide for the interdisciplinary sharing of the instruction for any course.

By the nature of their pre-service training, Business Education and Home Economics teachers would find it easier to instruct the social and economic factors than the Mathematics teacher. The mathematics associated with consumer topics is primarily basic computation, and since pupils have beer exposed to these topics at the elementary level, the arithmetic

aspects should be easily handled by teachers of all three subject areas.

There was strong concensus among committee members that pre-service and in-service education on the social and economic factors related to consumer topics be provided to Mathematics teachers.

Hand Held Calculators

At the committee meeting, strong support was found for the B. C. Mathematics Assessment finding that pupil-use of hand held calculators resulted in higher levels of achievement than for non-users. The advantage of relieving the pupil of the drudgery of performing arithmetic operations and avoiding the frustration of calculation errors that resulted in wrong answers although the mathematical procedure was known, were also cited. The cost of calculators has decreased so substantially that the school can now provide class sets of calculators without budgetary strain.

The committee also recommended that capital funds be provided from provincial sources for computer equipment as these purchases cannot be made at the present time. The growing use of computers in all areas is so evident that schools cannot continue to omit instruction in this area without negative impact on pupils' learning.

On the other hand, Dr. Gail Spitler warns of the unknown implication of the proliferation of the use of calculators and computers by pupils. "The effects of the inexpensive hand held calculator upon the teaching and learning of mathematics will be profound. When television was first mass produced there were few who predicted the magnitude of the impact of television upon society. The newspapers of the early 1950's discussed the demise of the motion picture and the danger of sitting too close to

the set. Today we are at a similar stage with respect to the hand held calculator (and the micro-computer). The public and professional press describe the calculator as a means to check computation, a way to complete, long, laborious calculations, and as a gadget with which to play games. We worry about allowing calculators to be used in classrooms, on tests, or in completing homework assignments. Our present understanding of the potential role and impact of the calculator are as naive as our original thoughts about the impact of television.

The calculator is now a part of everyday life. It provides quantitative exactness and speed. The user is able to obtain answers to problems that he is not able to complete with paper and pencil. Youngsters in grade 4 will know that $10 \div 3 = 3.3333333$ even though they are not able to complete the same division question themselves. Youngsters will also learn that $2.3 + 5.7 = 8.$ rather than 8.0 which is the normal sum obtained through paper and pencil calculation. The calculator will cause significant alteration in the mathematics curriculum in organization and content."(9)

Summary of Committee Discussion

1. That consumer mathematics topics be designated core and assigned higher priority than its present status.

2. A Math course is the primary means of providing access, but pupils should be counselled into elective courses.

3. That teaching be shared on an interdisciplinary basis.

4. That the use of hand held calculators be encouraged.

5. That capital funds be provided for purchase of computer equipment.

RECOMMENDED CONSUMER MATHEMATICS CURRICULUM

In Rank Order of Importance

		Rank Order[1]				Grade Level Coverage n=8			(2)	(3)
		4	3	2	1	Jr.	Sr.	Both		
1. A.	Basic computation, decimals	10	0	0	0	8			Yes	No
B.	Basic computation, percent	10	0	0	0	8			Yes	No
C.	Credit	10	0	1	0			8	Yes	Yes
2. A.	Calculator and computer literacy	9	0	0	0			8	No	No
B.	Basic computation, factions	9	1	0	0	8			Yes	Yes
3. A.	Banking	8	3	1	0		3	5	Yes	Yes
B.	Taxes--Income	8	2	2	0			8	No	No
4. A.	Statistics, tables, graphs	7	2	1	0			8	Yes	No
5. A.	Comparison shopping	6	5	0	0			8	No	Yes
B.	Savings, investment	6	5	1	0		4	4	Yes	Yes
C.	Consumer law	6	4	0	0		8		No	No
D.	Budgeting	6	4	1	0		4	4	No	Yes
E.	Income and expenses	6	4	2	0		3	5	Yes	Yes
6. A.	Taxes, sales	5	6	0	0			8	Yes	Yes
B.	Ratio and proportion	5	4	2	0			8	Yes	No
C.	Housing	5	3	3	0		8		No	Yes
D.	Payroll	5	3	4	0		8		No	No
E.	Measurement	5	3	3	0	1		7	No	No
F.	Purchasing systems	5	1	3	1		8		No	No
7. A.	Cash records	4	7	0	0		8		No	Yes
B.	Merchandising systems	4	5	3	0		8		No	Yes
C.	Inventory systems	4	3	3	1		8		No	No
8. A.	Insurance--Property	3	7	2	0		7	1	Yes	Yes
B.	Insurance--Automobile	3	6	1	0		3	5	No	Yes
C.	Automobile	3	6	2	0	1	3	4	No	No
D.	Taxes--Property	3	4	3	1		7	1	Yes	No
E.	Inflation	3	3	5	0		2	6	No	No
F.	Durable goods	3	2	7	0		8		No	No
G.	Probability	3	1	4	2			8	Yes	No
9. A.	Research	1	4	4	1		7	1	No	No
10. A.	Insurance--Life	0	7	3	1		6	2	Yes	Yes
B.	Transportation	0	4	3	2		8		No	No

(1) Rank order descriptors: 4. Essential, 3. Desirable, 2. Include if time permits, 1. Delete.

(2) Haliburton Group. Contemporary Canadian Business Mathematics.

(3) Treliving. General Business and Consumer Fundamentals.

The recommended curriculum covers not only consumer topics, but also those that provide an understanding of business and economics for personal use. Every student should know each topic at the knowledge, comprehension, and application levels of Bloom's Taxonomy. Consumer knowledge cannot be separated from the business and economic context if pupil skill development is to be achieved.

Rank Order of Importance of Topics

The initial compilation of committee members' rankings was virtually unchanged by the meeting with the exception of one deletion--estate planning and one addition--calculator and computer literacy.

The order was based on the frequency of responses for a topic in the essential ranking and those with identical ratings were grouped into ten classifications. The order within a classification was based on the frequency of responses in the desirable ranking. Although ten categories were thus developed, it is important to note that there was strong concensus among committee members that a lower ranking should not imply that the topic should or could be deleted.

The committee discussed the labelling of topics--eg. whether the computation label of simple interest be used in place of credit charges, and it was agreed that the consumer aspect would be given greater emphasis if non-computational labels were used.

The sub-topics or specifics of what would be taught for a topic--eg. computation was not considered by the committee. For example, under computation of fractions it was not deemed necessary to specify computation of simple fractions, mixed numbers etc.

Grade Level Designations

The committee made recommendations on the grade levels where a topic should be taught on the basis that major emphasis and responsibility for coverage should be divided between courses at the junior (grades 9 and 10) and senior (grades 11 and 12) levels, or in both, defined as evenly distributed between all four levels. Major emphasis does not imply that the topic should not be taught in the other grades, and what is presented at the junior level deemed the totality or completion of the topic at the secondary level.

Only the basic computation items of percent, fractions, and decimal were designated at the junior level. Nine of the 32 items, 5C, 6C, 6D, 6F, 7A, 7B, 7C, 8F, and 10B are recommended for senior level coverage. Eight items, 1C, 2A, 3B, 4A, 5A, 6A, 6B, and 8G were recommended for continuous coverage. The committee was fully aware of present difficulties of finding time to provide even initial coverage in the present curriculum, but made recommendations in light of the importance of the topics and student need for knowing the content.

An analysis was made of the two prescribed texts used in Consumer Mathematics 11 and Consumer Fundamentals 10 to determine the extent of coverage of the recommended topics. A topic was deemed taught if a pupil covered the knowledge, comprehension, and application levels in Bloom's Taxonomy. The following results were found and are shown in the last two columns of the curriculum topics: Consumer Mathematics, 14 of 32 topics covered; Consumer Fundamentals, 14 of 32 topics covered.

CONCLUSION

Pupils in B. C. are not acquiring basic skills and knowledge in consumer mathematics at the secondary level in spite of the fact that three

subject areas are teaching consumer topics. All three subject areas have recently revised their provincial curricula, but the deficiency of coverage has not been resolved as shown in the interim guides for each subject. It is hoped that curriculum committees from the three subject areas take action to remedy the deficiency before releasing the final curriculum guides.

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APPENDIX

COMMITTEE

Name	Subject Area	District
Sharon Cutcliff	Mathematics	Burnaby
Jane Davis	Business Education/Mathematics	Richmond
Hugh Elwood	Mathematics	Burnaby
Eda Favaro	Home Economics	UBC
Dorothy Filsinger	Home Economics	Surrey
Richard Hewitt	Business Education/Mathematics	Vancouver
Carol Koe	Mathematics	Hatzic
Bill Kokoskin	Mathematics	North Vancouver
Margaret Murphy	Home Economics	Vancouver
Robert Peard	Mathematics	North Vancouver
Gail Spitler	Mathematics	UBC
Shirley Wong	Business Education	UBC

Subject Areasand Courses Where Consumer Mathematics Topics Are Taught

Mathematics - 1978

1. Mathematics 10 - Ma 10
2. Business and Consumer Mathematics 11 - CMa 11

Business Education 1978

1.	Personal and Business Records 9	PBR 9
2.	Consumer Fundamentals 10	CF 10
3.	Marketing 11	Mk 11
4.	Introductory Accounting 11	IAc 11
5.	Accounting 12	Ac 12
6.	AdvancedAccounting 12	AAc 12
7.	General Business Law 12	GBL 12
8.	Machine Calculations and Procedures 12	MCP 12

Home Economics - grade levels shown within report where omitted

Management and Consumerism topics are to be integrated into the following courses:

1.	Foods and Nutrition	FN
2.	Cafeteria 12	C 12
3.	Family Studies 12	FS 12
4.	Housing and Interior Design 12	HID 12

The inventory of teaching topics is divided into 3 parts:

1. A teaching topic is followed by the courses where the subject is covered. The range and depth of coverages varies significantly from course to course, and from subject field to subject field. Some topics also overlap another, eg., income in budgeting and payroll; automobile costs and automobile insurance, but a topic was selected if it appeared that a distinct amount to teaching time was devoted to the topic alone. It was also difficult to differentiate between a personal or general education objective and a vocational objective for some topics. For example, is the pupil learning a payroll procedure such as calculating gross income using a time card studying a topic that everyone should know so that one is efficiently handling one's personal finances, or is the pupil preparing for the job of payroll clerk. The senior courses such as Accounting 12, Cafeteria 12 fall into the vocational category, but these have been included in this report to provide complete coverage.

2. Assessment of performance is shown by topic, performance percentage on survey tests, and interpretation rating where data was available from 3 sources.

    1. B.C. Mathematics Assessment - proficiency was rated by an interpretation panel using a 5-point scale:

        A. Strength
        B. Very satisfactory
        C. Satisfactory
        D. Marginally satisfactory
        E. Weakness

2. National Assessment of Educational Progress-American findings where achievement percentages are reported without interpretation.

3. Wong Study - on selected consumer mathematics questions. Achievement was rated using a 5-point scale:

   A. Very good
   B. Good
   C. Satisfactory
   D. Weak
   E. Very weak

3. Recommendations

Recommendation/s or comments about the teaching of the topic in the aforementioned reports.

Numbering system - the numbers to the left of the colon show the listing of topics in alphabetical order, while the number to the right of the colon identify assessment data.

Topic	Bus. Ed.	Math
1. Automobile ownership costs	CF 10 MCP 12 GBL 12	
2. Banking, deposits, cheques, withdrawals, simple and compound interest	Bus. Ed. PBR 9 CF 10 MCP 12 IAc 11 Ac 12 AAc 12	Math Ma 10 CMa 11

Assessment of Performance

Topic	% Accuracy	Performance Rating
2:1 Simple interest applying formula	*62*	*Marginally satisfactory*
Simple interest - find P given formula	*48*	*Weakness*
2.2.1 Bank reconciliation	1	
2.3.1 Bank reconciliation	10	Very weak

Recommendations

Inclusion of topic recommended in core curriculum number system, intermediate level H.8 and junior secondary number system objectives E.16 and E.17.

	Bus. Ed.	Math
3A. Basic computation - fractions		CMa 11

		% Performance	Rating
3A:2.1	*Addition*	*86*	*Satisfactory*
	Subtraction	*86*	*Very Satisfactory*
	Division	*74*	*Satisfactory*
	Multiplication	*87*	*Very Satisfactory*
	Fraction written as percent	*79*	*Satisfactory*
	Fraction written as decimal	*67*	*Marginally Satisfactory*
	Fraction written in lowest terms	*92*	*Strength*
	Fraction - number concept	*51*	*Weakness*
3A:2.2	*Fraction written as percent*	*65*	
	Fraction written as percent	*58*	

Recommendation

Core curriculum intermediate number system objectives E.9 and E.11. See also recommendations in 3.

3B. Basic computation - percent		Bus. Ed.	Math CMa 11
3B:2:2	*% of a number*	*36%*	
	% of a number + operation	*27*	
	% and relationship to 100	*70*	
	% of a number	*41*	
	% of a number + operation	*49*	
	Find %, given number	*45*	
	Find %, given number	*58*	
3B:2:3	*% of a number*	*70*	*Weak*
	Find number, given %	*60*	*Weak*

Recommendations

Core curriculum intermediate number system objective E.11. See also recommendations in 3C.

3C. Basic computation - decimals		Bus. Ed.	Math CMa 11
3C:2.1	*Addition*	*84%*	*Satisfactory*
	Subtraction	*85*	*Satisfactory*
	Division	*66*	*Marginally satisfactory*
	Multiplication	*78*	*Marginally satisfactory*

Recommendations

Core curriculum intermediate number system objective E.11. From the B.C. Mathematics Assessment:-

5.5.1 Solve Problems Involving Operations with Whole Numbers, Fractions, Decimals, and Percent

In a sense, almost all problems in mathematics involve operations with whole numbers, fractions, decimals, and percents; however, the intention is to include here those problems which involve such operations and nothing more. In that sense, such arithmetic problems are distinct from geometric or algebraic problems.

The test included nine arithmetic problems, and the results obtained by the students on these items are presented in Table 5-19.

Table 5-19
Grade 12 Results (N = 23 136)
Objective: Solves Arithmetic Problems (mean = 74.8%)

Item No.	Topic	Percent Correct	Panel Judgment
24	Unit Pricing	65	Marginally Satisfactory
25	Credit Buying	70	Satisfactory
26	Average	89	Very Satisfactory
27	Discount	86	Very Satisfactory
58	Percent	87	Satisfactory
59	Percent	79	Satisfactory
60	Percent	66	Marginally Satisfactory
71	Commission	62	Marginally Satisfactory
72	Tax Table	69	Marginally Satisfactory

The Interpretation Panel felt that there was room for improvement of students' performance on these types of problems. They wondered if sufficient time is being spent on the teaching of problem-solving and suggested that the performance would improve if students studied more business and consumer mathematics topics. Finally, they hypothesized that students' performance might reflect inadequate training in persistence, care, and attention to detail.

The Panel's last comment is an important one. There is no doubt that persistence, care, and attention to detail are necessary but not sufficient conditions to good problem-solving. Teachers have similarly decried students' seeming carelessness and inattention to detail for generations. It may be, however, that students will improve their skills in this area if teachers succeed in bringing a little of the real world into the mathematics classroom, thereby enlivening their discussions of topics which might otherwise be seen by the students as irrelevant and hence undeserving of persistence, care and attention to detail.

As the Panel has suggested, students' performance might improve if more consumer and business mathematics topics were taught, especially at the senior secondary level where they are most likely to be meaningful to students.

B.C. Math Assessment (Continued) 23

On the Assessment test, the few items ranked as marginally satisfactory are all consumer items, as are two rated very satisfactory and one rated satisfactory.

Special note should be made of Item 72 in which students were shown a page from the Canada Income Tax Guide and asked to find the total amount of tax due on a specified Taxable Income. Just over 30% of the respondents obtained the incorrect answer, thereby giving some evidence of their inability to read a table correctly, a table which many of them must have already used and which all of them will use sooner or later.

Recommendation 5-6: Teachers and teacher educators should stress the overriding importance of problem-solving in mathematics and they should attempt to teach their students various strategies to employ in attempting to solve problems in mathematics.

Recommendation 5-7: Individual teachers and mathematics departments should set up their own collections of problems and activities out of which problems grow, keeping in mind the interests of their students, and making use of local information in order that the problems will be more interesting to students.

Recommendation 5-8: The Curriculum Development Branch should give immediate and serious consideration to ways and means of ensuring that all students completing Grade 12 have been taught the major topics of consumer mathematics. (p. 136-7)

	Bus. Ed.	Math
4. Budgeting, sources of income	PBR 9 CF 10 AAc 12	CMa 11

4:2.1	*Credit cost/s*	*70%*	*Satisfactory*
	Average	*89*	*Very Satisfactory*
	Commission income	*62*	*Marginally Satisfactory*
4:2.2	*Gross pay from time card*	*31%*	
	Commission income	*37*	
4:2.3	*Gross pay from time card*	*12%*	*Very weak*

Recommendation

Core curriculum junior secondary civics objective H.11.

	Bus. Ed.	Math
5. Cash records, change, cash register tapes, daily cash reports, petty cash funds	PBR 9 CF 10 IAc 11 Ac 12 AAc 12	

Recommendation

Core curriculum primary number system objective E.6 - using coins and small change.

	Bus. Ed.	Math
6. Comparison shopping - See also budgeting	CF 10 GBL 12	

6:2.1	*Unit pricing - varying quantities*	*65%*	*Marginally Satisfactory*
6:2.2	*Cost comparison - mass*	*34%*	
	Cost comparison - mass	*40*	
	Cost comparison - cash vs. credit	*56*	
	Unit pricing	*14*	
	Unit pricing - time factor	*47*	
	Unit pricing - length	*10*	
	Unit cost - percent	*69*	
	Unit cost - percent + operation	*6*	
6:2.3	*Unit cost - mass*	*79%*	*Satisfactory*

	Bus. Ed.	Math
7. Consumer law Property law	CF 10 GBL 12	CMa 11

Recommendation

Core curriculum junior secondary level civics objective H.11.

	Bus. Ed.	Math
8. Credit - cards, accounts installment loans, interest includes bankruptcy	PBR 9 CF 10 Mk 11 MCP 12 GBL 12 IAc 11 Ac 12 AAc 12	Ma 10 CMa 11

8:2.1	*Credit costs*	*70%*	*Satisfactory*

Recommendation

Core curriculum junior secondary civics objective H.11.

	Bus. Ed.	Math
9. Durable goods - purchase of appliances, furniture. See also comparison shopping, budgeting	CF 10	
10. Estate planning - overlaps budgeting? law?	GBL 12	

	Bus. Ed.	Math
11. Housing costs: renting, buying, building-apartments, houses	CF 10 MCP 12 GBL 12	
12. Income and Expenses - profit and loss. Cafeteria 12 - pricing based on cost factors - labour, rent, utilities, interest, depreciation, table appointments, breakage, loss and theft	IAc 11 Ac 12 AAc 12	CMa 11
13. Inflation		CMa 11
14. Insurance - Automobile	MCP 12 GBL 12	CMa 11
15. Insurance - Property	MCP 12 GBL 12	CMa 11
16. Insurance - Life	MCP 12 GBL 12	CMa 11
17. Inventory systems - packing slips, shipping orders, freight bills, receiving reports, inventory control records	PBR 9 IAc 11 Ac 12 AAc 12	

Recommendation

Core curriculum junior secondary writing objective B.12.

18. Measurement Home design - floor plan	MCP 12	

18:2.1	*Metric*		
	Temperature	*87%*	*Very satisfactory*
	Capacity	*90*	*Very satisfactory*
	Mass	*54*	*Weakness*
	Length	*82*	*Very satisfactory*
18:2.2	*Imperial*		
	Unit cost - time factor	*47%*	
	Unit cost - length	*10*	
	Mass	*81*	
	Length	*66*	
	Capacity	*61*	
	Capacity and operation	*30*	
	Capacity and operation	*40*	
	Time	*35*	
	Area	*41*	
	Area and operation	*26*	
18:2.3	*Unit cost - mass*	*79%*	*Satisfactory*

Recommendation

B.C. Mach.: all students, especially senior students, be familiarized with metric concepts. Core curriculum primary measurement objective F.1, intermediate F.3 and F.4.

	Bus. Ed.	Math
19. Merchandising systems		
-Product pricing - cash discounts	PBR 9	Ma 10
markup, and markdowns	Mk 11	CMa 11
-Sales reports - stock turnover	MCP 12	
-Telephone and mail orders	IAc 11	
-Sales taxes	Ac 12	
-Credit procedures	AAc 12	

See also comparison shopping for product pricing and credit

19:2.1 Discounts - markdowns *86%* *Very satisfactory*

Recommendation

Core curriculum junior secondary writing objective B.12.

	Bus. Ed.	Math
20. Payroll - methods of calculating gross pay - commission deductions cheques and employee records	PBR 9 MCP 12 IAc 11 Ac 12	Ma 10 CMa 11

20:2.1 Commission *62%* *Marginally satisfactory*

2.2 Time card *31*
Commission *37*

2.3 Time Card *12* *Very weak*
Commission *60* *Weak*

	Bus. Ed.	Math
21. Probability		CMa 11
22. Purchasing systems	PBR 9	
requisitions	MCP 12	
creditors accounts, purchase orders	IAc 11	
back orders	Ac 12, AAc 12	
cash discounts		Ma 10
quality factors - food, non-food supplies, quantity purchases		

Recommendation

Core curriculum junior secondary writing objective B.12.

	Bus. Ed.	Math
23. Ratio, proportion		CMa 11

23:2.2 Area + proportion *70%*

Recommendation

Core curriculum junior secondary number system objective E.15.

	Bus. Ed.	Math
24. Research - market surveys	Mk 11	CMa 11
25. Savings and investments, stocks, bonds annuities, interest mortgages, pensions See also Banking-interest	CF 10 MCP 12 GBL 12 AAc 12	Ma 10 CMa 11
26. Statistics, tables, graphs	PBR 9 MCP 12	Ma 10 CMa 11

26:2.1	*Graph reading*	*87%*	*Satisfactory*
	Graph interpretation	*79*	*Satisfactory*
	Graph interpretation + operation	*60*	*Marginally satisfactory*
	Graph interpretation	*67*	*Satisfactory*
26:2.2	*Graph reading*	*79%*	
	Graph reading	*77*	
	Graph interpretation	*55*	
	Graph interpretation	*69*	
	Graph interpretation	*50*	
	Graph interpretation	*51*	
	Table interpretation	*54*	
	Table interpretation	*10*	
26:2.3	*Table reading*	*92*	*Highly satisfactory*

Recommendations

Core curriculum junior secondary problem solving objective L.10, senior secondary objective L.14.

	Bus. Ed.	Math
27. Taxes - Income - personal	CF 10 IAc 11 MCP 12 GBL 12 AAc 12	CMa 11

27:2.1	*Tax table*	*69%*	*Marginally satisfactory*
2.2	*(American)*		
	Tax table	*75%*	
	Tax table and operation	*30*	

27:2.3 Tax table *93%* Highly *satisfactory*

Recommendations

Core curriculum junior secondary writing objective B.12, senior secondary civics objective H.15.

	Bus. Ed.	Math
28. Taxes - Property	CF 10 MCP 12 GBL 12	Ma 10 CMa 11

28:2.2 Calculation *40%*

Recommendation

Core curriculum senior secondary civics objective H.15.

	Bus. Ed.	Math
29. Taxes - Sales	PBR 9 CF 10 MCP 12 GBL 12 IAc 11 Ac 12 AAc 12	CMa 11

29:2.3 Percent of cost *70%* *Weak*

Recommendation

Core curriculum senior secondary civics objective H.15.

	Bus. Ed.	Math
30. Transportation - goods post office calculations	CF 10 MCP 12 IAc 11 Ac 12 AAc 12	

30:2.2 Cost - time factor *47%*
Cost - length *10*

Recommendation

Core curriculum intermediate civics objective H.8.

Name _____ 29

RANKING SHEET

Please indicate the rank order of importance for each topic using a 4-point scale:

1. Essential
2. Desirable
3. Include if time permits
4. Delete

Then indicate the course/s where the topic should be taught.

Topic	1	2	3	4	Course	Course	Course
1. Automobile							
2. Banking							
3. A Basic Computation Fractions							
3.B Basic Computation Percent							
3.C Basic Computation Decimals							
4. Budgeting							
5. Cash Records							
6. Comparison Shopping							
7. Consumer Law							
8. Credit							
9. Durable Goods							
10. Estate Planning							
11. Housing							
12. Income and Expenses							
13. Inflation							
14. Insurance-Automobile							
15. Insurance-Property							
16. Insurance-Life							
17. Inventory Systems							
18. Measurement							
19. Merchandising Systems							
20. Payroll							
21. Probability							
22. Purchasing Systems							
23. Ratio, proportion							
24. Research							
25. Savings, Investments							
26. Statistics, tables, graphs							
27. Taxes-Income							
28. Taxes-Property							
29. Taxes-Sales							
30. Transportation, Post Office							

LOCATION & FREQUENCY OF CONSUMER MATHEMATICS TOPICS IN THE MATHEMATICS, BUSINESS EDUCATION, & HOME ECONOMICS SECONDARY CURRICULA

30	Automobile	Banking	Basic Computation	Budgeting	Cash Records	Comparison Shopping	Consumer Law	Credit	Durable Goods	Estate Planning	Housing	Income & Expenses	Inflation	Insurance-Automobile	Insurance-Property	Insurance-Life	Inventory Systems	Measurement	Merchandising Systems	Payroll	Probability	Purchasing Systems	Ratio, proportion	Research	Savings, Investments	Statistics, tables, graph	Taxes-Income	Taxes-Property	Taxes-Sales	Transportation-Post Of			
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30			
MATH																																	
Ma 10		X						X											X	X					X	X		X					7
Con Ma 11		X	X	X			X	X				X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X				21
																																	28
BUSINESS ED.																																	
Per. Bus. Rec.9		X		X	X			X									X		X	X		X				X			X				10
Cons. Fund. 10	X	X		X	X	X	X	X	X		X														X		X	X	X	X			14
Marketing 11								X											X					X									3
Mach. Cal. 12	X	X						X			X			X	X	X		X	X	X		X			X	X	X	X	X	X			17
Gen. B.Law 12	X					X	X	X		X	X			X	X	X									X		X	X	X				13
Int. Acct. 11		X			X			X				X					X		X	X		X					X		X	X			11
Acct. 12		X			X			X				X					X		X	X		X							X	X			10
Adv. Acct. 12		X		X	X			X				X					X		X			X			X		X		X	X			12
																																	90
HOME EC.																																	
Foods & N.						X													X			X											3
Cafeteria						X						X					X		X			X		X									6
Family St.				X				X	X		X				X	X				X					X								8
Housing ID				X		X		X	X		X							X															6
																																	23
	3	8	1	6	5	5	3	12	3	1	5	5	1	3	4	4	5	2	10	7	1	8	1	3	7	4	6	5	8	5			

*Depth and extent of coverage of each topic differ significantly!

SECOND REPORT

PERSONAL AND BUSINESS RECORDS 9	ABBREVIATION: PBR 9
	REPLACEMENT: RK 9
	LEVEL: Junior Secondary
	SEQUENTIAL TO: None

INTENT: This course is an introductory activity-based course covering the preparation and use of common personal and business records. The course will provide an opportunity to work with the sample forms and business records in several occupations.

CONTENT:

* Techniques of keeping records
  - skill in computation and calculating
  - recording data in columnar form
  - neatness, accuracy, and legibility
  - cross-checking
* Personal Money Management
* Personal Record Systems
  - budgeting
  - filing
* Identification and use of a variety of business papers
* Identification and completion of source documents
  - application for credit, budget records, deposit slips, invoices, memos, reconciliations, withdrawal slips, billing statements, cheques, employee records, loan forms, receipts, sales records
* Basic business skills and vocabulary
  - comparing, compiling, filing, recording, verifying, coding, copying, indexing, sorting
  - spelling, definition, and use of business vocabulary
* Preparation of business reports
  - introduction of graphs and flowcharting
* Cash Control Systems
  - cash records, cash registers, proof tapes, currency deposits, daily cash reports
* Cash Funds
  - vouchers and records
  - change and petty cash funds
* Inventory Systems
  - packing slips, shipping orders, freight bills, receiving reports, bills of lading, inventory control records
* Merchandising Systems
  - pricing of goods, charge accounts, sales reports, telephone and mail orders, invoicing, collection records and letters, sales tax
* Purchasing Systems
  - purchase requisitions, creditor accounts, purchase orders, back orders
* Payroll Systems
  - time cards, employee records, deductions, currency break-downs, earnings records, payroll summary, cheques
* Career Exploration
* Personal Development

CONSUMER FUNDAMENTALS 10		
	ABBREVIATION:	CF 10
	REPLACEMENT:	partial BC 10
	LEVEL:	Junior Secondary
	SEQUENTIAL TO:	None

INTENT: This course is a study of consumer fundamentals organized around three areas of consumer impact--the consumer, the consumer's effectiveness in the marketplace, and the consumer's preparation for the future.

CONTENT:

* Functioning in the marketplace
  - knowing the business community
  - the new consumerism
  - the difficult role of the consumer
  - characteristics of the Canadian economy
* Managing money
  - preparing a personal budget
  - keeping a record
  - location and use of resources, guides, and directories
* Consumer credit and borrowing money
  - cash and credit purchases
  - instalment buying
  - methods of making payments
* Buying goods and services
  - motivation for buying
  - buying for your needs
  - buying for your wants
* Buying durable goods
  - buying appliances
  - buying furnishings
  - buying transportation and recreational vehicles
* Renting, buying or building
  - deciding to buy or rent
  - choosing an apartment
  - buying a home
  - maintaining property
* Consumer planning for the future
  - the Canadian banking system
  - consumer savings facilities and their uses
  - lending facilities
  - investing money
* Communicating
  - written communications
  - postal information
  - telecommunications
  - computer communication
  - media communication
* Moving goods and people
  - shipping goods
  - moving goods
  - travelling
* Consumer legislation
  - provincial statutes
  - federal statutes
* The financing of government
  - levels of government
  - the need for taxes
  - sources and uses of tax dollars
  - types of taxation
  - preparation of personal income tax forms
  - qualities of a tax system

Business Education 3/7
MARKETING
11

* Store Organization
  - Buying and Pricing
  - Choosing the products
  - Choosing the vendors
  - Planning the merchandise mix
  - Developing the merchandise budget
  - Stock turnover
  - Pricing strategies
  - Merchandise pricing calculations

* Customer Services
  - Customer protection
  - Trends in customer services
  - Extending credit
  - Credit and collection procedures
  - Customer accommodation services
  - Advisory services
  - Customer shopping conveniences

* Market Research
  - Demographics of the consumer market
  - Information needed for making decisions
  - Sources of primary data
  - Methods of gathering secondary data
  - Preparing the research report

MACHINE CALCULATIONS & PROCEDURES
12

* Consumer buying problems
* Sales transactions and purchase charges
* Credit calculations
* Banking calculations
* Postal and freight calculations
* Weights, measures, and measurement
* Instalment loans
* Stocks and bonds
* Tables, charts, graphs, and statistic
* Insurance
* Credit control calculations
* Real estate
* Federal and provincial tax calculations
* Home ownership
* Automobile ownership
* Income tax procedures and calculations
* Wholesaling and manufacturing calculations
* Retail buying and retail selling
* Wages and payroll calculations

INTRODUCTION TO ACCOUNTING 11	ABBREVIATION: IAc 11
	REPLACEMENT: BK 11
	LEVEL: Senior Secondary
	SEQUENTIAL TO: Nil

INTENT This is an introductory course in accounting using acceptable accounting principles and records. It provides basic accounting knowledge and practical applications for those students continuing in accounting as well as for students electing a one-year course.

CONTENT:

* Accounting equation
* Recording business transactions using single and multi-column journals and ledgers
* Cash systems
  - Imprest funds
  - Cash control
  - Cash proofs
  - Banking procedures
* Reconciliations
  - Bank
  - Inventory
  - Receivables
  - Cash
* Recording business transactions affecting gross revenue
  - Non-trading revenue (service)
  - Trading revenue (merchandising), taxes, discounts
  - Returns and allowances
* Recording business transactions affecting net revenue
  - Cost of goods sold: purchases, freight, discounts, returns and allowances
  - Expenses
* Controlling accounts receivable
* Controlling accounts payable
* Working papers
* Payroll
  - Calculating gross wages
  - Deductions
  - Summaries
  - Entries
* Personal Income Tax
  - Calculations
  - Forms

Business Education 5/7 ACCOUNTING 12	ABBREVIATION: Ac 12 REPLACEMENT: part BK 12 LEVEL: Senior secondary SEQUENTIAL TO: IAc 11

INTENT: This course explores in depth several activities studied in Introduction to Accounting 11. It is a practical, activity-based course in applied accounting reflecting current business practices within the community.

CONTENT:

* Review of the accounting cycle including financial statements.

* Accounting concepts for business
  - Revenue: Cash Sales including credit cards and C.O.D.
    Sales on account
    Instalment sales
    Consignment sales
    Sales taxes
    Commission and other income
  - Costs: Purchasing procedures
    Freight costs
    Discounts, returns and allowances
    Inventory systems and controls
  - Expenses: Selling
    Administrative
    Other

* Accounts receivable
  - Billing procedures
  - Aging of accounts
  - Credit and collections: policies and procedures
  - Discounts
  - Controls

* Accounts payable
  - Payment procedures and records: vouchers, cash disbursements, discounts
  - Filing
  - Controls

* Cash and banking
  - Security and control
  - Cash proofs and reconciliations
  - Banking procedures
  - Credit

* Payroll
  - Time and employee records
  - Government forms and requirements
  - Accounting for earnings and deductions
  - Accounting for employer requirements

* Inventory
  - Perpetual inventory
  - Inventory taking (physical)
  - Price determination
  - Extensions

* Accounting methods
  - One-write systems
  - Posting machines
  - Journalless bookkeeping
  - Ledgerless bookkeeping
  - Cash registers
  - Automated accounting

ADVANCED ACCOUNTING 12	ABBREVIATION: AAc 12
	REPLACEMENT: AC 12
	LEVEL: Senior Secondary
	SEQUENTIAL TO: Ac 12

INTENT: This course introduces advanced accounting theory using generally accepted accounting principles. It may be taken concurrently with, sequential, to, or exclusive of Ac 12.

CONTENT:

* Accounting cycle
* Internal accounts
  - Vouchers
  - Expense reports
  - Cheque registers
* Financial statement analysis
* Depreciation (allocation of), depletion, amortization
* Inventory systems
* Taxation
* Budgeting and forecasting
* Manufacturing accounts
* Partnership accounts
* Corporation accounts
* Branches, agencies, franchises, departments
* Consignment
* Flow, source, and application of funds
* Adjusting and closing entries
* Cost accounting
* Notes, drafts, and interest
* Current government regulations
* Personal development
* Career skills

GENERAL BUSINESS LAW 12		
	ABBREVIATION:	CBL 12
	REPLACEMENT:	GB 12
	LEVEL:	Senior secondary
	SEQUENTIAL TO:	None

* Consumer law
  - Purchasing goods and services
  - Buying goods on credit
  - Law of bailments

* Property law
  - Purchasing real property
  - Classes of tenancy
  - Property taxes
  - Renting (Landlord and Tenant Act)

* Personal finance
  - Principles of wise buying
  - Saving and investing
  - Insuring against economic risks
  - Consumer rights and responsibilities
  - Estate planning
  - Bankruptcy and insolvency

* Car ownership
  - Purchasing
  - Renting and leasing
  - Operating cost - maintenance, cost of gas, type of car, etc.

* Government finances
  - Types of taxes
  - Completing personal income tax forms
  - Calculating personal income tax

MANAGEMENT AND CONSUMERISM

	JUNIOR SECONDARY			SENIOR SECONDARY	
	LEVEL ONE	LEVEL TWO	LEVEL THREE	LEVEL FOUR	LEVEL FIVE
A. PLAN TIME					
The student should:					
1. know the procedures for efficient use of time for preparation and clean up.					
2. be able to plan and carry out a time and work schedule for a. food preparation b. clothing projects c. vacation and hobbies d. personal time .. daily, weekly					
B. PLAN MONEY					
The student should:					
1. be aware of sources of income at various age levels: allowance, salary, interest, pensions.					
2. understand the importance of financial planning by analyzing needs, wants and ability to pay a. budgeting b. cash vs credit c. loans; long term, short term d. banking e. savings					
3. acquire knowledge of good buying practices: a. comparison shopping b. shopping lists c. selection for purpose d. value for dollar spent e. researching a product f. advertising impact					
4. be aware of current consumer legislation a. provincial b. federal					

MANAGEMENT AND CONSUMERISM

	JUNIOR SECONDARY			SENIOR SECONDARY	
	LEVEL ONE	LEVEL TWO	LEVEL THREE	LEVEL FOUR	LEVEL FIVE
5. be aware of the responsibilities of a good consumer. a. courtesy between customer and clerk b. hidden costs caused by: i shop-lifting ii breakage iii mishandling of merchandise iv abuse of return goods privilege c. knowledge of business practices, eg. credit, loss leader					

FOODS AND NUTRITION

	JUNIOR SECONDARY			SENIOR SECONDARY	
	LEVEL ONE	LEVEL TWO	LEVEL THREE	LEVEL FOUR	LEVEL FIVE
D. FRUITS					
8. compare costs of the same fruit in different manufactured or processed stages (eg: frozen juice, pasteurized juices; canned juice crystals)					
K. PROTEIN					
3. know the grades and cuts of meat and their relative cost and quality					
13. be able to estimate the amount required per serving of meat, fish, poultry and the relative nutrient costs of each					

FOODS AND NUTRITION

CAFETERIA 12A and CAFETERIA 12B

> Only in a school where there is a teaching cafeteria kitchen should the following food program be offered.

A. PURCHASING, COST CONTROL, RECIPES: MENU PLANNING

LEVEL FIVE

The student should:

1. gain experience in purchasing:
   a. quality grades and specifications of foods
   b. purchasing for requirements
   c. non-food supplies - paper, cleaning, etc.
   d. receiving & checking delivered supplies

2. understand factors involved in cost control
   a. market prices
   b. bulk purchase
   c. mark up
      i. food costs
      ii. labour
      iii. rent, utilities, etc.
      iv. interest
      v. depreciation
      vi. table appointments
      vii. breakage, loss and theft
   d. systematic recording of popular and unpopular items -- observation of foods returned on plates -- day of week, holiday, pay days, etc.
   e. portion control of food
   f. take inventory of supplies
   g. correct storage of supplies

SUGGESTED TEACHING ACTIVITIES

A. PURCHASING, COST CONTROL, RECIPES, MENU PLANNING

Purchasing

- Make a market study of the grades of foods and supplies used in the cafeteria.
- Write a market order for the food to be prepared and if local conditions permit, do the shopping entailed.
- Check supplies received against the food order placed and the accompanying invoice received.
- Role-play various ways of lodging verbal and written complaints and establishing good public relations.
- Visit a variety of wholesale business outlets.

Cost Control

1. Price foods commonly used in the cafeteria and compare prices monthly. Explain why this activity is a worthwhile investment of time for giant food corporations, as well as for the independent small operator.
2. Explain what is meant by mark-up.

Cost Control Cont'd

3. Explain what is meant by menu-item pricing and why this is an essential factor in cost control. Cost an item and then cut corners by using fewer ingredients and/or a lower quality food. Cost and compare the products.
4. For a specified period of time, receive, check, store supplies (food, equipment, paper and linen), and keep accurate records.

Main Course Food Products

- Investigate large quantity buying of individual portions of meat, fish and poultry from wholesalers.

FAMILY STUDIES

D. THE LIFE CYCLE (Cont'd)	LEVEL THREE	LEVEL FIVE
The Middle Age Family		
The student should:		
1. be aware of the changing needs		
a. preparation for retirement		
b. financial planning		
c. recreation		
2. be aware of the changing life styles		

SUGGESTED TEACHING ACTIVITIES

SUGGESTED FINANCIAL REPORT - LEVEL V

For the purposes of this project you may work alone or in pairs. Of course, twice the production will be expected from those working in pairs.

You are assumed to be eighteen years old; you have just graduated from secondary school and have moved away from home.
You may choose to: a) live alone
b) live with a room mate
c) live as a married couple

Assuming your present qualifications, you must find a job (full or part time). Try to make this realistic. If you intend to go into post secondary school, plan for it in the project and find the job accordingly.

Plans for the future:

Lay out your plans for the next ten years. This must be in reference to your chosen living arrangement. Consider the following:

a) Career(s)
b) Education
c) Marital plans
d) Children
e) Living accommodation (apartment, condominium, house)
f) Location - approximate

Income:

Work out your annual income and your monthly income. Consider your gross income, deductions and net income.

Deductions:

a) Canada Pension
b) Unemployment insurance
c) Income Tax
d) Medical and Dental Plan
e) Retirement Savings Plan
f) Union or Professional Dues

Find an apartment:

You will live in rented accommodation for the first year at least. In your report you will give its location, type (1,2,3, bedroom, hi-rise, basement suite) and the cost. What does the cost include?

Utilities:

Find the cost of utilities per month. (electricity, telephone, heat if not included in the rent, parking, etc.)

Food:

Do a week's shopping. First, plan menus for the week, then make a grocery list. Take this list to the supermarket and price each item. Find the total cost. (Remember to calculate sales tax.)

Credit Buying:

Investigate buying on credit. How much will it cost per month for:

a) a car
b) furniture
c) appliances

Entertainment:

Estimate the cost of entertainment for a month. Include entertaining at home and going out for dinner. Summarize your proposed entertainment habits along with your cost estimate.

Personal:

Estimate the cost of your personal items per month.

a) clothes (estimate cost per year and average it per month)
b) toiletries

Miscellaneous:

Estimate your miscellaneous costs.

a) daily transportation (bus, taxi, car maintenance)
b) prescriptions
c) lessons and education
   - music lessons
   - night school
   - post-secondary school

Compare your 'take home' salary with your expenses. Investigate the need for budgeting and 'cutting down' on expenses. You may find in your project that you are unable to live in the manner you have set down for you and/or your partner. This is a valid conclusion.

Consumerism and decision-making should be a major emphasis of this area.

LEVEL FIVE

A. HOUSING

The student should:

1. explore the different types of living accommodation
   a. advantages and disadvantages
   b. buying vs building
   c. renting vs buying (eg. Landlord Tenant Act)

2. consider many factors when buying a home
   a. financial
      i. sources of money (eg. government agencies, financial institutions, private sources)
      ii. costs (eg. taxes, insurance, mortgage interest)
      iii. legal contracts
   b. location
      i. transportation
      ii. schools, churches, services, neighbourhood
   c. plan, construction
   d. needs

SUGGESTED TEACHING ACTIVITIES

SUGGESTED HOME DESIGN PROJECT

This is an example of an assignment which could be utilized throughout the course.

1. Floor Plan

Design a floor plan of a year round home for a family of four that meets the following requirements:

a) Area - (teacher specify)

b) Scale - (teacher specify)

c) Size of each room should be measured and indicated on plan.

d) Over all dimensions of home measured and noted.

e) Correct labels and symbols throughout

f) Legend in lower right corner containing:
   . title
   . name
   . date
   . scale
   . directional symbol

g) Basement plus main floor or main floor plus upstairs

h) Final copy

HOUSING AND INTERIOR DESIGN

SUGGESTED TEACHING IDEAS:

2. Record of Costs

   a) Find out how much it would cost to purchase or build an accommodation similar to the one you designed.

   b) Find out how much it would cost for taxes, telephone, heat, electricity and/or gas for one year.

   c) Find out the approximate cost of household maintenance for 1 year, e.g. paint.

   d) List the approximate cost of furnishing rooms (Relate to #3)
   e.g. Bed
   Chest
   Drapes

1. If someone in the community is building a house, ask if your class could plan a colour scheme for it. If possible, obtain a copy of the house plans and make copies for the students. Have students plan interior walls and exterior colour schemes, including floorings and coverings, walls, drapes, kitchen appliances and counters, bathroom fixtures, etc. The best ideas can be given to the home builder and perhaps a field trip can be arranged to the home site, so the students can see the home under construction.

2. When discussing the various kinds of housing available, organize a student debate on topics such as:

   a) Buying a House versus Renting a Home
   b) Apartment Living versus Home Living
   c) Owning a Mobile Home Versus Owning a Conventional Home

3. Have students select a home appliance, either major (stove, washer) or minor (toaster, iron) and do research to decide what would be the best kind to buy. They can use information from consumer reports, from sales people or from people who own them. Write a report including whether or not this is a necessary appliance in the home, the current price, reasons for buying a particular model and sources of information.

SUGGESTED FIELD TRIP IDEAS:

1. Tour housing and/or condominium developments - have a sales person point out features and construction details.

2. Visit a mobile home sales lot.

3. Furniture store - have a salesperson show how to determine quality and compare furniture as to cost.

4. Visit an upholstery and/or drapery store.

BUSINESS AND CONSUMER MATHEMATICS 11 (Cn Ma 11)

This course is designed for students interested in careers in business or commerce, and for students who wish to become knowledgeable consumers. The course can be adapted to meet the differing needs and interests of each of these groups and the subject matter can be treated in such a way that students need only a minimal level of algebraic skills. In schools where there exists a sufficiently high level of interest and/or demand, the topics listed may be developed in more depth.

The topics should be approached through the solution of real problems in measurement, graphing, interest, discount, profit and loss, installment buying, financing, banking, taxation, annuities, simple statistics, probability, investment, insurance, mortgages, budgeting, etc.

Consultation with teachers of business education and home economics is recommended.
Time Allotment: Approximately 100 hours.

Learning Outcomes

The student is able to develop an understanding of:

1. the basic arithmetical computations (addition, subtraction, multiplication, division of whole numbers, fractions, decimals, percentage) with applications to specific business problems.

2. the Mathematics of Retailing and Accounting
   a) ratio, proportion, percent, markup and markdown
   b) discount, commission, depreciation, inflation
   c) taxes – personal
      – property
      – sales

3. the Mathematics of Banking and Finance
   a) simple interest
   b) compound interest
   c) mortgages
   d) credit cards, installment financing
   e) annuities

4. the Mathematics of Investment
   a) stocks and bonds
   b) insurance – life insurance
      – homeowner's insurance
      – automobile insurance
   c) pension, retirement savings plan, etc.

5. the Mathematics of Decision Making
   a) probability as applied to business
   b) statistics as applied to business

6. consumerism
   a) market surveys
   b) budgeting
   c) laws for consumers

3. Consumer Mathematics

The following topics should be used wherever appropriate to develop the mathematical ideas and applications outlined below in sections A, B and C:

Automobile Ownership
Insurance
Borrowing, saving and investing money
Earning money and payroll
Taxes – income, property, sales.

R 9 10

A. SIMPLE INTEREST

The student is able to:

– X ● 1. use the concept of simple interest in calculations of discount, commission, profit and loss, payroll, insurance premiums, property taxes, etc.;

– X ● 2. determine:
a) from a table, or
b) by counting or calculation the number of days in parts of a year;

– X ● 3. calculate present value and future amount.

B. COMPOUND INTEREST

The student is able to:

– X ● 1. explain the meaning of compound interest;

– X ● 2. calculate the number of interest periods in a given length of time;

– X ● 3. calculate bank interest; (given the formula).

C. ANNUITIES

The student is able to:

– E 1. explain the nature of annuities, (those in which the interest period = payment period) as exemplified in:
a) mortgage payments
b) installment buying
c) charge accounts.

– X ● 2. calculate the true rate of interest in installment payments when given the formula.

RANK ORDER OF IMPORTANCE FOR TOPICS:
1. Essential
2. Desirable
3. Include if time permits
4. Delete

BE - Business Education
Ma - Mathematics
HE - Home Economics

	1			2			3			4		
	BE	Ma	HE	BE	Ma	HE	BE	Ma	HE	BE	Ma	HE
1. Automobile	1	1	1	2	3	1		1	1			
2. Banking	3	3	2		2	1			1			
3.A Basic Computation Fractions	3	4	2		1							
3.B Basic Computation Percent	3	5	2									
3.C Basic Computation Decimals	3	5	2									
4. Budgeting	1	3	2	1	2	1	1					
5. Cash Records	2		2	1	5	1						
6. Comparison Shopping	1	3	2	2	2	1						
7. Consumer Law	2	2	2	1	2	1						
8. Credit	3	4	3					1				
9. Durable Goods		1	2	1		1	2	4	1			
10. Estate Planning						1	1	2	2	2	2	
11. Housing	2		3		3		1	2				
12. Income and Expenses	3	2	1	1	2	1		1	1			
13. Inflation	2	1			1	2	1	3	1			
14. Insurance--Automobile	1	1	1	2	3	1		1				
15. Insurance--Property	1		2	1	4	2	1	1				
16. Insurance--Life				2	3	2	1	1	1		1	
17. Inventory Systems	1	1	2	2	1			2	1		1	
18. Measurement		3	2	2		1	1	2				
19. Merchandising Systems	2	1	1	1	1	3		3				
20. Payroll	3	1	1		2	1		2	2			
21. Probability		3			1		3		1		1	1
22. Purchasing Systems	3	1	1			1		2	1		1	
23. Ratio, proportion	1	4		1		3	1	1				
24. Research		1		2		2	1	2	1		1	
25. Savings, Investments	3	2	1		3	2			1			
26. Statistics, tables, graphs	2	5		1		1			1			
27. Taxes--Income	3	2	3		1	1		2				
28. Taxes--Property	1	1	1		2	2	2	1			1	
29. Taxes--Sales	2	2	1	1	3	1						
30. Transportation, Post Office				1	1	2	2	1			2	

First Course

	Business			Mathematics					Home Economics		
1. Automobile	CMa	CMa	PBR	Ma/GBL	CMa	Ma		CF	FS	FS	CF
2. Banking	CMa	CMa	PBR	CMa IAc		Ma	CMa	CF	BE	C	Ma CMa
3.A Basic Computation Fractions	Ma	CMa	Ma	Ma CMa	Ma	Ma	Ma	Ma	*		CMa
3.B Basic Computation Percent	Ma	CMa	Ma	Ma CMa	Ma	Ma	Ma	Ma	*		CMa
3.C Basic Computation Decimals	Ma	CMa	Ma	Ma CMa	Ma	Ma	Ma	Ma	*		CMa
4. Budgeting	CMa	CMa	PBR	PBR MC CF	CMa	Ma	CMa	CF	FS	FS	CMa
5. Cash Records	IAc		PBR	PBR IAc CF		PBR	IAc	CF	C BE CMa	C	
6. Comparison Shopping	CMa	CMa	CF	CF MC	Ma	Ma	FN	CF	FN	FN CT	
7. Consumer Law	CF		CF	GBL 12		CF	Law 11	CF	BE FN	FS	CMa
8. Credit	CMa	CMa	PBR	GBL Ac CF Ma CMa	Ma	Ma	CMa	CF	FS	FS	Ma CMa
9. Durable Goods		CMa	CF	FS HID		CF	Ac	CF	HID		
10. Estate Planning	GBL			GBL	CMa	CF	FS	CF	BE CMa	FS	
11. Housing	GBL	Trades Ma	CF	FS HID	CMa	GBL	FS	CF	HID	HID	
12. Income and Expenses	IAc Ac AAc	AAc	PBR Ac	CMa IAc	CMa	IAc	CMa	CF	C	HID	CMa

* Include in learning activities

First Course (Continued)

	Business			Mathematics					Home Economics		
13. Inflation	CMa	CMa	CF	CMa FS	Ma	CF	Econ	CF		C	CMa
14. Insurance--Automobile	CMa	CMa	CF	CMa FS Ma	Ma	with item 1	CMa	CF	BE CMa	FS	CMa
15. Insurance--Property	CMa	CMa	CF	CMa FS	Ma	Ma	CMa	CF	HID BE CMa	HID	CMa
16. Insurance--Life	GBL	CMa	CF	CMa FS	Ma	Ma	CMa	CF	FS BE CMa	FS	MCP GBL
17. Inventory Systems	Mk		IAc Ac	PBR IAc		PBR	Ac	CF	BE C	C	
18. Measurement	CMa	CMa	Ma	HID	Ma	HID	Ma	Ma	CMa HID	HID	
19. Merchandising Systems	CMa	CMa	IAc	CMa Ac Mk		Ma	Mk	CF	BE FN	FN	Ma CMa
20. Payroll	CMa	CMa	PBR	FS PBR		Ma	CMa	CF	BE	FS	Ma CMa
21. Probability	CMa	CMa	CMa	CMa	Ma	Ma	Ma	Ma			Ma
22. Purchasing Systems	Ac	CMa		Ma CMa		PBR	Ac	CF	BE	C	Ma
23. Ratio, proportion	CMa	CMa	CMa	MCP Ac	Ma	Ma	Ma	CF	CMa	HID	CMa
24. Research	CMa		Mk	Mk C		CF	Mk	CF	all areas	C	CMa
25. Savings, Investments	Ma CMa	CMa	CF	AAc FS	Ma	Ma	CMa	CF	FS BE CMa	FS	Ma CMa
26. Statistics, tables, graphs	Ma CMa	CMa	PBR	Ma CMa	Ma	Ma	Ma	Ma	CMa		Ma CMa
27. Taxes--Income	CMa	CMa	PBR	CMa CF	CMa	Ma	CMa	CF	BE FS CMa	FS	CMa

First Course (Continued)

	Business			Mathematics					Home Economics		
28. Taxes--Property	GBL	Trades Ma	PBR	CMa CF	CMa	CF	CMa	CF	BE HID	FS	Ma CMa
29. Taxes--Sales	CMa	CMa	PBR	CMa PBR	Ma	Ma	CMa	CF	BE		CMa
30. Transportation, Post Office			CF	MCP Ac		CF	Mk	CF	BE		

Second Course

	Business			Mathematics					Home Economics		
1. Automobile	GBL		CF		CMa		MCP	CMa	BE		GBL MCP
2. Banking	CF	IAc	CF	BE	CMa		PBR MCP CF	CMa			BE
3.A Basic Computation Fractions	CMa		CMa		CMa	CMa		CMa			
3.B Basic Computation Percent	CMa	MCP	CMa		CMa	CMa		CMa			
3.C Basic Computation Decimals	CMa		CMa		CMa	CMa		CMa			
4. Budgeting			CF	BE	CMa		FS CMa	CMa	FN	HID	PBR CF
5. Cash Records		IAc	IAc	BE	CF		Ac AAc	CMa			BE
6. Comparison Shopping	GBL		PBR		CF	CMa	C HID	CMa	CT	HID	CF GBL
7. Consumer Law	GBL	GBL	GBL	BE	GBL	CMa	CF	CMa	CT	HID	CF GBL
8. Credit	MCP GBL		CF	BE	CMa		HID FS/MC IAc MCP	CMa	HID	HID	BE
9. Durable Goods					FS		CF	CMa	C	FS	CF
10. Estate Planning					FS						GBL
11. Housing	HID		PBR		HID		GBL MCP	CMa	FS	FS	CF MCP GBL

Second Course (Continued)

	Business			Mathematics					Home Economics		
12. Income and Expenses	CMa		CF		CMa		Ac AAc	CMa	FS BE CMa	FS	IAc Ac AAc
13. Inflation	AAc		MC		CMa			CMa	BE	FN	
14. Insurance--Automobile	GBL	GBL	GBL		with item 1		MCP GBL	CMa			MCP GBL
15. Insurance--Property	GBL	GBL	GBL		CMa		MCP GBL	CMa		FS	MCP GBL
16. Insurance--Life		GBL	GBL		FS		MCP GBL	CMa			CMa
17. Inventory Systems	IAc Ac AAc	AAc	Ac	BE	Ac		Ac AAc	CMa			PBR IAc Ac AAc
18. Measurement	MCP		CMa		CMa	CMa	MCP	CMa	FN CT		
19. Merchandising Systems	Mk MCP Ac	Mk IAc	Ac	BE	CMa		AAc C	CMa	C	CT	PBR Mk MCP IAc Ac AAc
20. Payroll	MCP		CF	BE	CMa		MCP IAc Ac	CMa			PBR MCP IAc
21. Probability					CMa	CMa					
22. Purchasing Systems	AAc	IAc MCP			CMa			CMa	C	FN	PBR MCP IAc Ac AAc
23. Ratio, proportion					CMa	CMa	C AAc	CMa			
24. Research	Mk	Mk			Mk		CMa	CMa		FN	Mk

Second Course (Continued)

	Business			Mathematics				Home Economics	
25. Savings, Investments	MCP	GBL AAc	GBL	CMa		CMa CF	CMa		CF MCP GBL AAc
26. Statistics, tables, graphs	CF		Ma	CMa	CMa	MCP	CMa		PBR MCP
27. Taxes--Income	GBL		CF	CF		IAc	CMa	HID	GBL IAc Ac CF MCP
28. Taxes--Property			CF	CF		MCP	CMa	HID	CF MCP GBL
29. Taxes--Sales	Mk	IAc MCP	CF	PBR		CF IAc	CMa		PBR MCP CF
30. Transportation, Post Office		IAc		FS		CF IAc	CMa		IAC Ac AAc CF MCP

Third Course

	Business			Mathematics				Home Economics	
1. Automobile			MC	CF		CF	MC	CMa	FS
2. Banking	MCP		MC	CF		Ac AAc MC Ma	MC	FS	MC FS
3.A Basic Computation Fractions				PBR			MC		
3.B Basic Computation Percent				PBR			MC		
3.C Basic Computation Decimals				PBR			MC		

Third Course (Continued)

	Business		Mathematics				Home Economics		
4. Budgeting		MC	HE	PBR CF	MC HID Ac	MC			FS HID MC
5. Cash Records				IAc		MC			
6. Comparison Shopping	MC		HE	MC	GBL FN	MC	FS HID	C	MC FN FS CT HID
7. Consumer Law		MC	HE	CMa	GBL CM	MC	FS HID		MC
8. Credit	MC	MC	HE	CF PBR	MC PBR AAc	MC	BE CMa		MC FS HID
9. Durable Goods	HID		HE	HID		MC	BE		FS HID
10. Estate Planning				GBL		MC	FS		
11. Housing		GBL		CF	CF	MC	BE		FS HID
12. Income and Expenses	C	GBL		C	C	MC		C	C
13. Inflation	GBL			C FS HID		MC	FS		FS
14. Insurance--Automobile		MC		with item 1		MC			FS
15. Insurance--Property		MC		HID FS		MC			FS
16. Insurance--Life		MC		CMa		MC			FS
17. Inventory Systems	C	AAc	BE	C	C	MC			C
18. Measurement	HID			CF		MC			HID
19. Merchandising Systems	FN	AAc	BE	Mk	Ma PBR IAc FN	MC	HID	C	FN C HID

Third Course (Continued)

	Business	Mathematics	Home Economics
20. Payroll	IAc MC	BE PBR Ma MC CMa	C FS
21. Probability		CF MC	
22. Purchasing Systems		C CMa MC	C
23. Ratio, proportion		MC PBR MC IAc FN	
24. Research	C	C MC	CT C
25. Savings, Investments	GBL MCP MC	CF MCP MC GBL Ma	FS
26. Statistics, tables, graphs	MCP CF	CF PBR MC	
27. Taxes--Income	AAc GBL	GBL MCP MC AAc GBL	FS
28. Taxes--Property	GBL	HID GBL MC Ma	FS HID
29. Taxes--Sales	IAc GBL Ac AAc	CMa Ma MC GBL Ac AAc	MC
30. Transportation, Post Office		HID AAc MC	